Use of a Low Stimulation Environment of Care to Improve Outcomes for Infants with Neonatal Abstinence Syndrome

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I have no conflicts of interest to disclose.

All medications for the treatment of Neonatal Abstinence Syndrome (NAS) are used off-label.
Increasing numbers of neonates are withdrawing from maternal substances
- Heroin is cheap and readily available → ↑ methadone
- Culture of improved pain management in healthcare

There is NO correlation between dose of maternal substances and infant withdrawal symptoms.
Scoring of NAS Symptoms

Withdrawal symptoms requiring pharmacologic intervention define a coding diagnosis of NAS.
Prolonged hospital stays to manage symptoms

**Infant/Family**
- Feeding complications
- State /behavioral control allowing appropriate sleep
- Complex maternal and family needs

**Staff/Operational**
- Census backup, patient mix changes
- Demands on nursing time, patience, and skill
Review of Evidence

- Where’s the data?
- All NICUs are eager for potentially better practices for this population of infants
- Reported use of ↓stimulation in Washington
- Was our ↓stimulation still too stimulating?
(Lack of ) Evidence → Action

- Decreasing stimulation further would be low tech, low risk, and do-able in current physical space.

- Existing NICU task force could be used to plan and carry out a trial

- **Purpose of the practice innovation:**
  - To decrease the occurrence and severity of withdrawal symptoms by lowering stimuli further than usual NICU minimal stimulation
Outcome Measures

- **Primary Outcome**: LOS

- **Secondary outcomes**: Measures of medication management
  
  Direct and proxy measures such as severity of symptoms and length of time to stabilization of symptoms. highest score, highest dose of morphine, total dosage of morphine
NAS Task Force Sub-Groups

- Operational
- Environmental
- Clinical Interventions
- Family Involvement
- Data Management
- Staff and physician relations
Environment/Practice Changes

Up to 4 infants at a time, cared for by 2 RNs in a separate nursery for at least 2 weeks

- Access to room restricted
- All conversations in whispers
- Light-screening and black-out shades
- Dim, indirect lighting
- Strict grouping of cares
- Partnership with family regarding approach to care
- Discerning use of seats, swings, music, strollers
- A time-interrupted (before and after) prospective cohort study
- All infants admitted to Wheaton Franciscan – St. Joseph Level III NICU with a diagnosis of NAS.
- Seventeen control infants admitted between 1/1/2013 and 8/31/2013 were compared to 19 neonates born during the intervention time period (9/1/2013-11/30/13).
The control and intervention groups were similar with respect to severity of symptoms at admission and at initiation of treatment.
Length of Hospital Stay

NAS Infants Average LOS - Days

Pre: 39 days
Post: 18 days
Infants Requiring Medications

Percentage of NAS Infants Requiring Medication Management

- **Morphine**: Pre (94%), Post (70%)
- **Phenobarbitol**: Pre (41%), Post (20%)
- **Clonidine**: Pre (59%), Post (20%)
Infants Discharged on Meds

Percentage of Infants Discharged on Medication

- Pre: 59%
- Post: 30%

Wheaton Franciscan Healthcare
The use of a lower stimulation room for infants with NAS was associated with a decrease in:

- length of stay
- any pharmacologic management
- total days of medication treatment and discharge on medications
Discussion

- Medication protocols
- Breastfeeding protocols
- Limitations of coding definition for NAS
- Long-term outcomes data
- Local, state, and national sharing of protocols and pooling of data